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and Dohrn has adduced the supposed zoëa-form larva of these egg-parasites as a proof, we cannot but think in a subject so purely speculative as the ancestry of animals, that the facts brought out by Ganin tend to confirm the reviewer's theory, expressed in the last number of this journal, that the ancestry of all the insects (including the Arachnids and Myriapods) should be traced directly to the worms. The development of the degraded, aberrant arachnidan Pentastomum accords, in some important respects, with that of the intestinal worms. The Leptus-form larva of Julus, with its strange embryological development, in some respects so like that of some worms, points in that direction, as certainly as does the embryological development of the egg-parasite Ophioneurus. The Nauplius form of the embryo or larva of all Crustacea, also points back to the worms as their ancestors, the divergence having perhaps originated in the Rotatoria. In these similar modes of development between the worms and the Crustacea on the one hand, and the worms and insects on the other, have we not a strong genetic bond uniting these three great classes into one grand sub-kingdom; and can we not in imagination perceive the successive steps by which the Creator, acting through the secondary laws of evolution, has built up the great articulate division of the animal kingdom?—A. S. P.

NATURAL HISTORY MISCELLANY.

BOTANY.

Transpiration of Aqueous Vapor by the Leaves of Plants.—Professor McNab of Cirencester College, England, has recently published an important series of experiments on this subject. The plant experimented on was in all cases the common cherry-laurel (*Prunus laurocerasus*), and the fluid to determine the rapidity of ascent, lithium citrate, a very small quantity of which can be detected by means of the spectroscope. Dr. McNab divided the results under the following heads:—1. Quantity of water in the leaves. The mean of several experiments gave 63.4 per cent. 2. Quantity of water which can be removed by calcium chloride, or sulphuric acid, *in vacuo.* This was found to be from 5.08 to 6.09 per cent. 3. Amount of transpirable fluid in the stem and leaves, 7.58 per cent. The remainder, from 56 to 57 per cent., was therefore determined to be fluid in relation to the cell-sap of the plants. 4. Rapidity of transpiration in sunlight, diffused light, and darkness. The results given are:—in sunlight, 3.03 per cent. in an hour; in diffused daylight, 0.59 per cent.; in darkness, 0.45 per cent. 5. Amount of fluid transpired in a saturated, and in a dry atmosphere in the sun, and in diffused daylight. In sunshine, the experiments gave 25.96 per cent. in an hour, in a saturated atmosphere; 20.52 per cent. in a dry atmosphere; in the shade the results were reversed, nothing whatever in a saturated, 1.69 per cent. in a dry atmosphere. These results strikingly confirm the earlier experiments of Dehérain, that evaporation from leaves is due to light and not to heat, and that it proceeds equally in a perfectly saturated atmosphere. 6. Quantity of water taken up by leaves when immersed in it. The mean of several experiments gave 4.37 per cent. in one and one-half hours. 7. Quantity of aqueous vapor absorbed by leaves in a secluded atmosphere. This was found to be nil, again confirming the statement of M.M. Prillieux and Duchartre that plants absorb no moisture whatever in the state of vapor through their leaves. 8. Differences in the amount of fluid transpired by the upper and under side of leaves in the sun and in diffused daylight. From the upper surface in sun 1.74 per cent. in an hour, from the under surface 12.33 per cent.; from the upper surface in diffused light 2.82 per cent. in forty-eight hours, from the under surface 16.08 per cent.; from both sides when coated with collodion, 0.86 per cent. in sun, 2.56 per cent. in diffused light. 9. Relation of fluid taken up, to that transpired, and that retained, by the plant. Increase of weight of branch in saturated atmosphere, diffused daylight, in forty-eight hours, 7.34 per cent., in ordinary atmosphere, 7.14 per cent., in darkness, 3.01 per cent. 10. Rapidity of ascent of fluids. From 4 7–12 inches in ten minutes to 8 7–12 inches in ten minutes. 11. Influences of gases on transpiration. Transpiration of fluid in oxygen in one hour in sun, 12.77 per cent., in atmospheric air, 7.5 per cent., in carbonic acid, 4.01 per cent., in nitrogen, 1.97 per cent. The bad weather, and the lateness of the season, terminated the experiments before several points of interest could be fully determined.—A. W. B.

MALE FLOWERS ON THE EAR OF INDIAN CORN.—In the April number of the AMERICAN NATURALIST, we expressed a desire to see specimens with a part of the ear male, that being so very much rarer than the case of the male panicle bearing female flowers and fruit, which, indeed, is common enough. Our correspondent, Dr. Henry Shimer, of Mt. Carmel, Ill., has sent us a specimen, accompanied by a long communication, touching upon hypothetical matters which we do not care now to discuss. We will only remark that the instance is not the one we had in view in asking. We wanted to see male flowers on the ear, that is, male flowers in the place of female ones, or else hermaphrodite flowers. But Dr. Shimer's instance is not of that sort. It is a case of a male panicle produced from the apex of a female spike, which, as he remarks, is too common to excite much attention.

FLOWERING OF THE VICTORIA REGIA IN THE OPEN AIR.—Joseph Mager, Esq., has succeeded in flowering the Victoria Lily in his pond in England. The pond is perfectly open, but the water is heated by hot water pipes coming from a boiler near the pond, carefully concealed. The seeds of the Victoria were planted in May last, and the first flower was produced Sept. 10th. Afterwards seven other flowers opened. The plant has eight leaves, of which the largest is five feet, two inches, in diameter. Mr. Mager has also succeeded in flowering a large number of other tropical lilies in his pond. The "London Field" for Nov. 26th, gives an engraving of the pond, and an account of the treasures it contains.

ISOETES IN THE DETROIT RIVER.—Though the Isoetes has been found in the Niagara river, and in the Oswego river near the Falls, and also at Sault St. Marie, near Lake Superior, the Lake botanists had failed to find it in our vicinity. This last season, however, after many fruitless searches, I discovered it (September 11th, 1870) at Windsor, Ontario. The specimens I at once found to be a well-marked form of *I. echinospora* Durien. In a subsequent search (September 18th), I found the same species, but of a distinct form, at Sandwich, Ontario, a point farther down our river. At both points, which are about three miles apart, and opposite the city of Detroit, the plants were taken from the river; and I attribute their growing on that side to the soil being more gravelly there than on the north side.

All of the specimens are quite small, the largest hardly exceeding three inches in height. In my Windsor plant the presence of stomata is at once apparent; the spinules on the macrospores are short, thick, and in connected ridges; the microspores being abundant and characteristic of the species. In the Sandwich plant the stomata, though present, are more difficult to find, being very few and indistinct; and the macrospores, though of equal size with those of the former plant (about 0″.23 in diameter) differ in being provided with spinules which are long, slender, and, occasionally, slightly forked. No microspores were observed. The presence of stomata in both these distinct forms of this species, which is a most variable one, is worthy of note.—HENRY GILLMAN, *Detroit, Michigan.*

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ZOOLOGY.

A NEW GENUS OF BRACHIOPODS.—Among some small shells (supposed to be the young of *Waldheimia cranium*), recently received from the Northeast Atlantic, through Mr. Jeffreys, were three specimens of an undescribed genus of the subfamily *Terebratulinæ.* The shell resembles *Magasella*, being smooth and with an incomplete foramen. The loop nearly resembles that of *Ismenia sanguinea* Chemn., but has no secondary attachment to the hæmal valve, and the latter is destitute of a septum. I propose, for the genus, the name of *Frenula*, from the bridle-shaped loop; and, for the species, that of *Frenula Jeffreysii.* More extended descriptions are in preparation.—W. H. DALL.

EMBRYOLOGY OF LIMULUS.—A reviewer in the Quarterly Journal of Microscopical Science (Jan. 1871, p. 89), seems to think it very little to our credit that the embryology of Limulus should have remained so long unknown, "seeing that they are favored by its presence in abundance on their coasts." This is hardly a charitable view to take of the subject, and shows that the writer of the notice has not the most remote idea of the difficulty attending researches on the sea coast. It is impossible to make connected observations, without extending them over a long series of years, and no one who is not thoroughly familiar with the habits of any marine animal at all seasons of the year, can hope to accomplish anything more than the most fragmentary work. The time of spawning of many of our most common inhabitants of the coast, is often very short,